

ABSTRACT

The present invention generally relates to plant nitrogen regulatory PII gene (hereinafter P-PII gene), a gene involved in regulating plant nitrogen metabolism. The invention provides P-PII nucleotide sequences, expression constructs comprising said nucleotide sequences, and host cells and plants having said constructs and, optionally expressing the P-PII gene from said constructs. The invention also provides substantially pure P-PII proteins.

The P-PII nucleotide sequences and constructs of the invention may be used to engineer organisms to overexpress wild-type or mutant P-PII regulatory protein. Engineered plants that overexpress or underexpress P-PII regulatory protein may have increased nitrogen assimilation capacity. Engineered organisms may be used to produce P-PII proteins which, in turn, can be used for a variety of purposes including *in vitro* screening of herbicides. P-PII nucleotide sequences have additional uses as probes for isolating additional genomic clones having the promoters of P-PII gene. P-PII promoters are light- and/or sucrose-inducible and may be advantageously used in genetic engineering of plants.

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